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| 10/550,896      | 09/27/2006  | Hisashi Miyamori     | 4035-0175PUS1       | 1709             |

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| EXAMINER |
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NEWMAN, MICHAEL A

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| ART UNIT | PAPER NUMBER |
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2624

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05/27/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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|                              |                                      |  |  |
|------------------------------|--------------------------------------|--|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/550,896 | <b>Applicant(s)</b><br>MIYAMORI, HISASHI |  |
|                              | <b>Examiner</b><br>MICHAEL A. NEWMAN | <b>Art Unit</b><br>2624                  |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 January 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

1. The amendment received on February 25<sup>th</sup>, 2009 has been entered.
2. In view of the amendment to the claims, the amendment of claims 1, 6, 7, 12, and the addition of claim 15 has been acknowledged. Claims 13 and 14 were previously cancelled.
3. In view of the amendment of claim 1, the 35 U.S.C. 101 rejection of claims 1 – 6 has been withdrawn.

### ***Response to Arguments***

4. Applicant's arguments filed on February 25<sup>th</sup>, 2009 have been fully considered but they are not persuasive.
  - a. In pages 10 – 12 of the Remarks, regarding the 35 U.S.C. 103 rejection of independent claims 1 and 7 over Martins (U.S. Patent No. 6,950,123), "Martins" and Averbuch et al. (U.S. Patent No. 7,085,401), "Averbuch"; Applicant's Representative submits that the combination discloses eliminating an entire field area of shaped image objects bounded by the multiple line segments, whereas the present invention only eliminates a line segment having only two end points and not any area adjacent to the line segment. Initially, the Examiner submits that the present invention does actually eliminate area adjacent to the line segment. For example, paragraph 0048 of the published application states that "a lined-shaped image elimination unit (23) enlarges the line segment obtained at

Art Unit: 2624

the above [line segment extraction] step and removes the line segment."

Nevertheless, even if the invention *only* eliminated a line segment having only two end points, the present claim language does not require such an exclusive elimination. Currently, the pertinent claim language requires that (1) an individual line segment having only two end points be extracted from a lined-shaped image object and (2) a line-shaped image object be eliminated from the moving image object. As correctly noted by Applicant's Representative, Martins teaches eliminating a field area bounded by multiple line segments. Admittedly, Martins does not remove only lined-image objects nor does it remove only an individual line segment having two endpoints. But Martins does remove the field, and as a result, the field's field lines (a line-shaped object) made up of several individual field line segments having two endpoints defined at the points of connection with the other field line segments. Clearly, Martins does teach the limitations, as *claimed*.

In the remainder of the Remarks, Applicant's Representative submits that Averbuch does not teach the aforementioned limitations. However, as discussed above, Martins teaches them, such that Averbuch does not need to also teach it under 35 U.S.C. 103.

In view of this reasonable interpretation of the claim and the prior art, the Examiner *respectfully* insists that the rejections below are proper.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1 – 12 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Lines 1 – 4 in claims 1 and 7 recite: "*eliminating* an individual line segment... having only two end points from a line-shaped image object overlapping a moving image object in one image comprising effective or ineffective pixels, from the moving image object." [**preamble**] It is unclear as to whether the individual line segment is eliminated from (1) a line-shaped image object, or (2) the moving image object.

However, lines 6 – 8 and 5 – 7 in claims 1 and 7, respectively, recite: "*extracting* the individual line segment having only two end points from the lined-shaped image object." [**limitation 1**]

And, lines 9 – 11 and 8 – 9 in claims 1 and 7, respectively, recite: "*eliminating* the lined-shaped image object from the moving image object." [**limitation 2**]

Therefore, while the **preamble** appears to indicate that it is the 'individual line segment' which is eliminated from either (1) the lined-shaped image object or (2) the moving image object; **limitation 1** appears to indicate that the individual line segment is *extracted* from the lined-shaped image object, and **limitation 2**

Art Unit: 2624

indicates that it is the line-shaped object which is *eliminated* from the moving image object.

Since it is unclear as to what is being eliminated and from what, the claims fail to clearly set forth the invention as are therefore indefinite.

b. Lines 1 – 4 in claim 15 recite: “*eliminating* a line segment having only two end points from a line-shaped image object overlapping a moving image object... from the moving image object.” **[preamble]** It is unclear as to whether the individual line segment is eliminated from (1) a line-shaped image object, or (2) the moving image object.

However, lines 5 – 6 recite: “*extracting* the line segment having only two endpoints from the lined-shaped image object.” **[limitation 1]**

And, lines 7 – 8 recite: “*eliminating* the line segment having only two end points from line-shaped image object from the moving image object.” **[limitation 2]**

Therefore, while limitation 1 appears to indicate that the ‘line segment’ is extracted from the lined-shaped image object. Preamble and limitation 2 appear to indicate that it is the ‘line segment’ which is eliminated from either (1) a line-shaped image object, or (2) the moving image object.

Since it is unclear as to what is being eliminated and from what, the claim fails to clearly set forth the invention as is therefore indefinite.

For the purpose of further examination, the claims will be interpreted as requiring that a line-shaped image object, made up of line segments having only two end points be eliminated from a moving image object.

c. Lines 14 – 16 in claim 7 recite: “dropping a perpendicular from the pixels to be scanned... *to a nearest line segment...*” It is unclear as to whether the limitation is referring to a nearest ‘individual’ line segment or another line segment. The claim is therefore indefinite.

### ***Claim Rejections - 35 USC § 103***

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 1 – 4, 6 – 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martins (U.S. Patent No. 6,950,123) in view of Averbuch et al. (U.S. Patent No. 7,085,401). Hereinafter referred to as Martins and Averbuch, respectively.

a. Regarding claims 1, 6, 7 and 12, Martins teaches an image processing apparatus and method for selectively eliminating an individual line segment having only two end points from a line-shaped image object (**Martins Col. 4 lines 28 – 31 – “Field Model”**), overlapping a moving image object in a single image comprising effective or ineffective pixels, from the moving image object (**Martins Col. 5 lines 60 – 66 – “The players”**), the apparatus comprising: a line segment extraction means for selectively extracting the individual line segment having only two end points from the line-shaped image object (**Martins Col. 4 lines 28 – 31 and lines 45 - 46**) [**Note that a soccer field consists of line segments similar to those of the exemplary tennis court in the disclosure**]; a line-shaped image elimination means for eliminating the line-shaped image

Art Unit: 2624

object from the moving image object (**Martin Col. 5 line 64 - Col. 6 line 3**); an image scan means for scanning a vicinity region of the individual line segment having only two end points on the moving image object and sequentially extracting pixels to be scanned (**Martin Col. 6 lines 1 – 4**) [**Note that players are scanned and converted into blobs**]; an effective pixel determination means for determining whether or not the extracted pixels to be scanned are the effective pixels (**Martin Col. 6 lines 8 – 10**). Martin proceeds to track players by identifying the largest *connected* components in each region of interest (**Martin Col. 6 lines 58 – 60**), in order to improve accuracy; Martin suggests applying noise floor processing and morphological filtering to the difference image. However, **Martin fails to teach** a pixel interpolation means for dropping a perpendicular from the pixels to be scanned that are determined to be the effective pixels at the effective pixel determination step to a nearest line segment and setting each individual pixel on the perpendicular as the effective pixels. **Pertaining to the same field of endeavor Averbuch teaches an automatic moving object extraction system in which after an initial identification of moving segments, a region-growing algorithm is applied to eliminate missing pixels (Averbuch Col. 24 lines 54 – 57). Specifically Averbuch teaches for each object, extracting edge line information using, for example, the Hough transform, and for extracted edge line belonging to an object, interpolation is performed to obtain a complete contour. However, to fill missing pixels of each object, Averbuch teaches choosing the lowest**



previously-derived real point on the object, drawing the perpendicular line of the lowest pixel until it hits another real point. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to, as suggested by Martin, carry out a morphological operation such as the region growing implementation taught by Averbuch on Martin's extracted player blobs to improve the centroid location assigned to the largest *connected* component and thus improve player tracking.

b. Regarding claims 2 and 8, Martin further teaches that the image is one frame in the moving image object comprising a plurality of frames **(Martin Col. 3 lines 3 – 5).**

c. Regarding claims 3, 4, 9 and 10 Martin further teaches that the image is an image obtained by subjecting a single frame or plural frames in the moving image object comprising the plurality of frames to predetermined arithmetic processing, wherein the arithmetic processing is any one of processing for determining a difference between two arbitrary frames in the moving image or processing for determining a change region in one arbitrary frame in the moving image. **(Martin Col. 5 line 64 – Col. 6 line 3) [Note that the difference operation is arithmetic processing].**

***Allowable Subject Matter***

9. Claim 11 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

10. Claim 15 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **MICHAEL A. NEWMAN** whose telephone number is

Art Unit: 2624

(571) 270-3016. The examiner can normally be reached on Mon - Thurs from 9:30am to 6:30pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew C. Bella can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew C Bella/  
Supervisory Patent Examiner, Art  
Unit 2624

M.A.N.